

APPENDIX B: NO_x EMISSION STANDARDS

On-Road Vehicles

On-Road Heavy-Duty Diesel Compression-Ignition (CI) Engines NO_x Emission Standards by Model Year

Emissions Model Year	Diesel Engines Emissions Standard	
	NO _x Only (g/bhp-hr)	NO _x +NMHC (g/bhp-hr)
1989 and earlier	10.7	
1990	6.0	
1991-1997	5.0	
1998-2001	4.0	
2002	4.0	
2003	4.0	
2004 -2006	2.375	2.5
2007 - 2009	2.375 – 0.2	
2010+	0.2	

**Some manufacturers were producing 2003 engines that met the more stringent 2.375 g/bhp-hr standard.*

Non-Road Equipment

Non-Road Diesel Compression-Ignition (CI) Engines NO_x Emission Standards by Model Year

Engine Power (HP)	Tier	Model Year	Emissions (NO _x) g/bhp-hr	Emissions (NO _x + NMHC) g/bhp-hr
25≤hp<50 (19≤kW<37)	Tier 0 (uncontrolled)	pre-1999	7.2	N/A
	Tier 1	1999-2003	6.745	7.1
	Tier 2	2004-2012	5.32	5.6
	Tier 4	2013+	3.325	3.5
50≤hp<100 (37≤kW<75)	Tier 0 (uncontrolled)	pre-1998	8.8	N/A
	Tier 1	1998-2003	6.9	N/A
	Tier 2	2004-2007	5.32	5.6
	Tier 3	2008-2012	3.325	3.5
100≤hp<175 (75≤kW<130)	Tier 0 (uncontrolled)	pre - 1997	9.5	N/A
	Tier 1	1997-2002	6.9	N/A
	Tier 2	2003-2006	4.655	4.9
	Tier 3	2007-2011	2.85	3.0
	Tier 4 (Phase-In)	2012-2013	0.30-2.851	N/A
	Tier 4	2014+	0.30	N/A
175≤hp<300 (130≤kW<225)	Tier 0 (uncontrolled)	pre-1996	9.3	N/A
	Tier 1	1996-2002	6.9	N/A
	Tier 2	2003-2005	4.655	4.9
	Tier 3	2006-2010	2.85	3.0
	Tier 4 (Phase-In)	2011-2013	0.30-2.851	N/A
	Tier 4	2014+	0.30	N/A
300≤hp<600 (225≤kW<450)	Tier 0 (uncontrolled)	pre-1996	9.5	N/A
	Tier 1	1996-2000	6.9	N/A
	Tier 2	2001-2005	4.56	4.8
	Tier 3	2006-2010	2.85	3.0
	Tier 4 (Phase-In)	2011-2013	0.30-2.851	N/A
	Tier 4	2014+	0.30	N/A

Non-Road Equipment (continued)Non-Road Diesel Compression-Ignition (CI) Engines NO_x Emission Standards by Model Year

Engine Power (HP)	Tier	Model Year	Emissions (NO_x) g/bhp-hr	Emissions (NO_x + NMHC) g/bhp-hr
600≤hp<750 (450≤kW<560)	Tier 0 (uncontrolled)	pre-1996	9.7	N/A
	Tier 1	1996-2001	6.9	N/A
	Tier 2	2002-2005	4.56	4.8
	Tier 3	2006-2010	2.85	3.0
	Tier 4 (Phase-In)	2011-2013	0.30-2.851	N/A
	Tier 4	2014+	0.30	N/A